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Inovace v českém pivním průmyslu

Innovation in the Czech Beer Industry

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References:

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SWANN, G. *The economics of innovation: an introduction.* Cheltenham: Edward Elgar, 2009. ISBN 978-184-8440-272.
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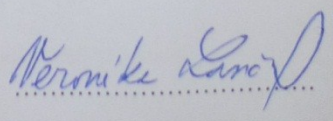

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1 Introduction

The innovation is a vital part of every company, segment and the whole industry. The development of new products is a necessity. The Czech beer industry experienced a decline recently due to the economic crisis and increase of consumption tax on beer and was consequently forced to innovate at a fast pace.

There are many types of innovation and this study focuses on the most recent one introduced to the Czech market – a product called radler. This beverage has been known in Europe for more than 50 years and has not been accepted by the Czech customers before although there were attempts on introducing radlers a few times in the last 20 years. This study aims to discover why the previous attempts were less successful than the most recent one.

The aims are expressed by following objectives:

- to explore what influences Czech brewing companies and how;
- to analyse and compare the reasons that led Czech brewing companies to start to produce radlers;
- to research the innovation diffusion.

The theoretical part of the study includes two chapters. In the first one the literature about innovation is reviewed. Based upon work of number of authors the definition, types, diffusion, theories, models and strategy of innovation are discussed. Special attention is drawn to product and technological innovation as well as to the S-curve model of diffusion which is consistent with the research objectives. The second theoretical chapter introduces the Czech beer industry and market. The history, presence and impact of crisis are discussed with focus on radlers that are defined and their development in the Czech Republic and generally in Europe is explored. Finally the future and trends in the Czech beer market are discussed.

In the methodology chapter strategies and methods of research are presented, evaluated and in the end the most suitable ones are chosen. The limitations of this study are mentioned together with the ethics issues. Furthermore the representativeness, reliability and validity of the study are discussed.

The results are analysed in the next chapter. Both primary and secondary research is analysed and data are compared and displayed with tables and charts. The profile of participants is followed by data relevant to individual objectives.

The discussion chapter connects the data analysed to the theoretical part of study. The chapter is divided according to the research objectives and concludes with deductions, recommendations for companies, suggestions of further research and predictions. The conclusion draws attention to the main points of the whole study including the objectives and the summary of based on the previous chapters.

2 Literature review – Innovation

2.1 Definition

Every author defines innovation in a slightly different way which is caused by the various fields of their research, period of time they published their work in and their personal point of view.

Some authors believe that only new products and services are an innovation. Schumpeter (1939) regards innovation as creating a "new production function". New articles of trade, new company arrangements and creating new demand are also included in his definition. In his point of view, innovation is a new approach to connecting features. Redlich (1951) defines "primary or genuine innovation" as a newly carried chance or opportunity. To innovate therefore means to contrive any object. Drucker (2001) sees innovation in enriching both people and sources by better welfare productivity. He adds that the population's requirements have to be transformed by managers to have the chance to create a cost-effective business. Parker (1980) opines that innovation consists of devising a new concept in conjunction with effective development of a new material, process, product or system. This approach affects the firm's strategy because it causes incoherence.

On the other hand the object of innovation may not necessarily need to be original. According to Rogers (2003) it is not important if a product or knowledge is actually new. It depends on the person who encounters the possible innovation and on their response. Object understood as new by the recipient of information is in his perspective an innovation.

It is important to understand that innovation is a continuous process. Innovation lies in the middle of large number of firm's procedures (Trott, 2008). He emphasises that innovation is a process consisting of many different functions which management need to handle. These features are: introducing a new conception, changing the technology and developing marketing of the new goods and services. He presents the following equation:

Innovation = theoretical conception + technical invention + commercial exploitation

Myers and Marquis (1969) also highlight the fact that innovation is a process. They add that it involves "sub processes". Only the juncture of new product or view with creating a new demand forms the process itself.

A few rather different but interesting and simple definitions follow. Innovations appear to alter the receiver's comfort and increase worth of the source (Drucker, 1985). Freeman (1982) simply states: "…not to innovate is to die".

Despite many different points of view all the authors (as well as the Oxford English Dictionary) agree that innovation generally presents ideas unknown or modifies what is already known.

2.2 Types

There are many ways to divide the innovation. For example Schumpeter (1962) presents five types of innovations that are rather different from those of other authors:

- "introduction of a new product or a qualitative change in an existing product;
- process innovation new to an industry;
- the opening of a new market;
- development of new sources of supply for raw materials or other inputs;
- changes in industrial organisation"

OECD and Eurostat (2005) mention many kinds of innovations in different parts of the Oslo manual. In one part it offers three general choices for companies that seek innovation opportunities, "strategic, R&D and non-R&D". The strategic one applies to contextual decisions within a corporate environment. R&D refers to enlarging a company's familiarity with basic procedures connected to its product. Non-R&D involves a lot of other functions.

Generally, it is possible to recognise two main types of innovations: technological and other ones. OECD and Eurostat (2005) distinguish "technological and non-technological" innovations. That contrasts to the former versions of the Oslo manual that presented only technological innovations which included product and process innovation. Schmidt and Rammer (2007) believe the non-technological innovation should be included in the concept of innovation and appreciate that OECD has altered its point of view. Drucker (2001) also lists "technological and nontechnological" innovations. He clarifies "nontechnological" by introducing examples of such innovation: "social or economic". Tidd (2010) speaks about technological, organizational and commercial innovations.

Technological innovations are well known and have been defined before the non-technological ones. Rogers (2003) proposes two categories of technological innovations: “hardware” and “software”. Nevertheless the “software” technological innovations (which he recognises as hypotheses, theories or concepts) apparently do not seem very technological to other authors and may be listed within the scope of non-technological ones. OECD and Eurostat (2005) often specify “technological product and process innovations” (TPP). In this case ‘product’ means both goods and services. The product part of TPP can be divided to technologically new (considerably distinct) and improved (upgraded) products. The process part of TPP concerns new or enhanced “production methods”.

After widening the definition, there appear to be many types of non-technological innovations. Schmidt and Rammer (2007) list these as “organisational and marketing innovations”. Management innovation is creation and application of new management activities and tools developed in within the frame of firm’s aims (Birkinshaw et al, 2008). Hamel (2009) believes that innovation in management provides company with a “competitive advantage”. But only if any of his prerequisites fulfils. He lists these conditions: the innovation is new and critical to persisting points of view; it is “systemic” and therefore includes number of techniques and procedures; innovation is a component of continuous rather quick long-term development.

It seems to be helpful for a firm to combine both types of innovation. An interesting point is that the most effective conjunction considerably increasing the return on sales is “organizational and product innovation” (Mothe and Nguyen, 2010). Schmidt and Rammer (2007) also talk about connection of both types having notable “positive effect on profit margin”.

The number of typologies is almost the same as the number of authors introducing these typologies. In order to clarify at least some of the typologies, the following image is presented:

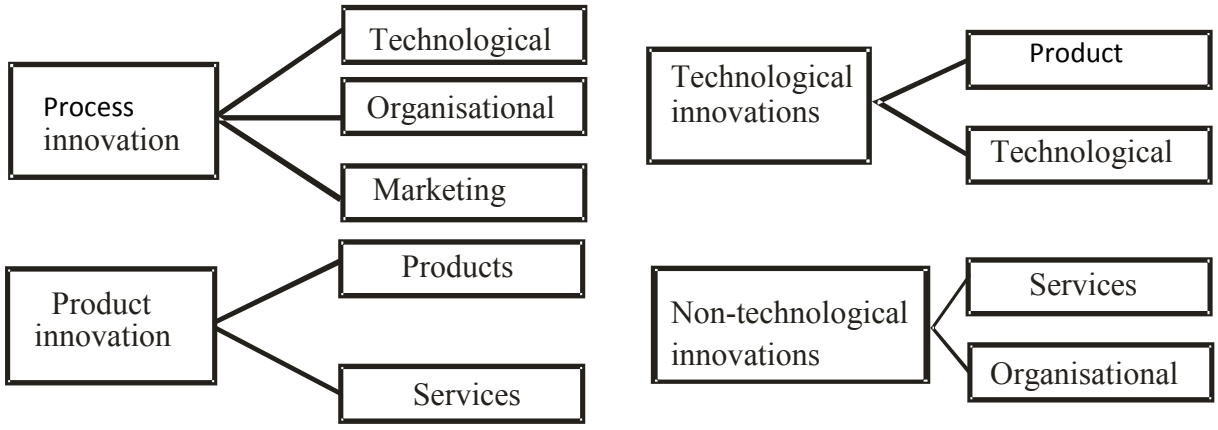

Figure 1 Bártová, 2008

The research within this dissertation focuses on product innovation and possible technological innovation connected with that. Consequently these specific types of innovation are explained more in the next section.

2.2.1 Product innovation

It is essential for every firm to have the knowledge to be able to create and sell a product. The process of product innovation covers this necessary concept logically (Patterson and Fenoglio, 1999).

OECD and Eurostat (2005) consider product innovation as a part of TPP as it has been mentioned before. They define product innovation as putting a new product into practice or embracing considerably distinct services. That happens via modifying devices, human capital, operational techniques or some of them. They do not include a mostly subjective alteration in a product concerning "customer satisfaction". Such innovation is brought into being by marketing from technological product innovation.

Trott (2008) has a different perspective. He recognises the "new product development" (NDP) as one of the possibilities for companies intending to expand. NDP is a part of every firm's strategy since essentially all businesses need to make their goods competitive. That is, according to him, achieved by constant innovating and upgrading. He adds that making something new is not very difficult because it is enough to change only one of a product's features, if even slightly. And it is possible to modify every feature.

2.2.2 Technological innovation

This type of innovation is the one regarding novelty or considerable change in terms of modernisation, rationalisation or revision of structure. OECD and Eurostat (2005) state that technological innovation includes "production process and products" and backup functions. Regular refining the methods of the delivery of goods or the overall firm's presentation are demanded. Nevertheless these are not TPP innovations since such alterations apply to a subjective view of customer, not the modification of technology. Preserving and maintaining are not TPP innovations either, as well as upgrading if not related to important change to the goods or the form of manufacturing or product distribution. Therefore, they continue, the TPP innovations contain only newly presented and introduced or remarkably modified goods, services, methods and techniques. TPP process contains a number of "scientific, technological, organisational, financial and commercial" operations. A company that has announced the TPP novelty or has considerably updated products or processes within a given interval is a TPP innovating firm.

Technological innovation has got a reasonable place within the company's performance. It supports a firm's productivity and is a vital part of an organization. Schumpeter (1939) connects technological

innovation with the "laws of physical returns". He points out that missing innovation causes the uneventful decline of the curve of each feature's efficiency. In the case of innovation, following a curve substitutes the original one and demonstrates greater growth. However, the new curve eventually continues declining too. He compares the situation presented to Ricardo's "law of decreasing returns" which talks about the substitution of the old law defining the implications of added doses by new law. The new curve applies in both cases all through and the change comes in the form of a lunge.

2.3 Diffusion of innovation

It has already been discussed that innovation is a process. The process of innovation is not happening only within the company that implements it. There is a process of accepting the innovation within the industry. Trott (2008) recognises the position of new product development in an industry innovation cycle. At the beginning, firms of a considerable size produce novelty goods or services. Similarly large companies adapt to the change of competition by creating their varieties of the novelty. It continues down to the smaller and smaller companies as far as the whole industry changes its strategy. Such process is usually called the diffusion of innovation.

> "The diffusion effect is the cumulatively increasing degree of influence upon an individual to adopt or reject an innovation, resulting from the increasing rate of knowledge and adoption or rejection of the innovation in the social system," (Rogers and Shoemaker, 1971).

The definition of diffusion is fairly clear and most authors would probably agree with the quote above. Clark (1984) sees innovation as the ways new thoughts are perceived by the adopters who may find them important. OECD and Eurostat (2005) define diffusion as a process when one firm's innovated product develops into another company's innovated process. Innovation spreads through channels to various countries, parts of countries, various industries and markets, companies and parts of companies. Diffusion has a vital function within an economy. It enables the innovation to spread and to apply widely. The interaction between elements of diffusion may create new knowledge too. Rogers (2003) also defines diffusion as a process with information transferred through channels enhancing that the communication contains new ideas. Tidd (2010) describes diffusion as the way of transforming innovation into "social and economic benefits."

The key components of diffusion are the innovation, communication, channels, time and the social system (Rogers and Shoemaker, 1971).

2.3.1 S-curve

The S-shaped (logistic) curve is used to picture the diffusion of innovation the most often. As the diffusion spreads, the number of adopters rises until a point where most of the industry (area,

organization) has adopted the innovation. Hongwu (2010) proposes that at the beginning, only a few companies have access to new technologies. The performance enlarges as the diffusion continues. After a certain level of integration the marginal value added by technological capability slowly flattens out. Bejan and Lorente (2012) noticed that the curve of every effective innovation is noticeably alike. It starts with a low number of acceptors and slowly spreads. Later on the technology or idea starts to disperse massively, which is depicted as a distinctly high growth of the curve. The final phase is described as the point of saturation from which the spread rate is small.

There are a few types of the S-curve model. Tidd (2010) explains the "epidemic" and the "probit model". He opines that the first one is older and more common and has got a few assumptions that are rather idealistic. Tidd says that adopters simply are not alike with identical needs. Geroski (2000) considers this model simplified for the same reasons. The epidemic model stresses the importance of communication. The key for successful diffusion is understandable pieces of information. The probit model is, according to Tidd (2010), "more sophisticated" because it includes the assumption of varied receivers and their diverse needs. This would then clarify the difference in the speed of diffusion. The more homogenous the population is the quicker diffusion can be. Geroski (2000) appreciates the probit model and emphasises that the structure of diffusion might be significantly influenced by individuals' choices.

The adopters can be divided according to the time they adopt the innovation. Ryan and Gross (1943) identified "early adopters", the "majority" and the "latest adopters". Geroski (2000) mentions "early adopters", "late adopters" and "non-adopters". Tidd (2010) lists "early adopters", "early majority", "late majority" and the "laggards". The position of each group of adopters can be easily pictured in the S-shaped curve. Rogers and Shoemaker (1971) introduce these types of adopters: "innovators", "early adopters", "early majority", "late majority" and "laggards". They show that the later adopter is the longer innovation-decision period they have. This agreeably explains the shape of the S-curve. The categories described are based on reality; nevertheless some simplification and categorization needed to be done to formulate theories. They describe the innovators as sociable risk-takers willing to revise unavailing thoughts. The early adopters are creditable opinion leaders whilst the early majority are not leaders but adopt the ideas relatively early. The late majority are typical for doubting and being careful while the laggards are described as almost isolated conservative "suspicious" ones.

Rogers and Shoemaker (1971) point out that the "innovation-decision" process can be described by two rates: the "rate of awareness-knowledge" and the "rate of adoption". The main difference between these two is the time. Most of the adopters first become acquainted with the innovation,

then there is a time interval Rogers and Shoemaker call “the innovation-decision” period and finally, if decided so, the potential adopters adopt the innovation. Both the rates seem to remind the shape of the S-curve. The length of the “innovation-decision period” depends upon the type of adopter.

They also identify the phases of the process of itself. The potential adopter first familiarises with the idea, then “forms an attitude”, makes the key “decision” and finally takes an action that “confirms” the decision made.

2.4 Theories

There are many theories of innovation of which some are presented.

2.4.1 Kondratiev

Nikolai Kondratiev was one of the first statisticians to analyse long term data from different countries and thus identify long economic cycles. Until then only shorter waves were recognised. His predictions drew attention many times because they were incredibly accurate. He believed that the cycles last for about 50 years and are caused by the invention of new technologies that appear regularly and predictably. The rising wave should be defined by using the surplus for further investment and exploiting new opportunities. Trotsky at that time employed himself in the same topic. He had a different opinion on what in fact causes the waves. Nevertheless they agree at least that the long cycles existed and are probable to be repeated in the future (Day, 1976 and Kerevan, 2000).

2.4.2 Schumpeter

Schumpeter (1939) designated the entrepreneurs as innovators who create dynamic disequilibrium via creative destruction. Recession and crisis are caused by previous prosperity. Nevertheless the following prosperity is caused not by crisis but radical innovation. He lists five types of “new combinations” as follows: introduction of a new good, method of production, market, resource or the new system of an industry. According to Kurz (2008) Schumpeter’s ‘new combinations’ refer to existing elements of knowledge combined in a new order to create economically useful information. He believed in mobility of capital and levelling off market prices.

In the heart of a system there is innovation causing change. This is called “mutation”. The sources of growth in Schumpeter’s concept of capital are “circular flow” and “development process”. The second one is stimulated by innovation. In the long run, economic development in developed civilizations is based on the diffusion of major technological innovations (Freeman and Louca, 2001).

Solo (1951) on the other hand views innovation as a common part of every organisation and believes that firms with potential in innovation exploit this opportunity by research and development. She emphasises the need to revise Schumpeter's theory.

Schumpeter (1939) believes in the existence of several cyclical wavelike movements of a different length. He combines the work of several authors and designs a complex theory. In his opinion single waves do interfere with other waves that need to be separated and examined. Schumpeter identifies four types of waves, Kondratiev, Wardwell, Jurglar and Kitchin wave, each including the following shorter ones, named after authors that researched waves of such length. Kondratiev cyclical movements are those fifty years long (Day, 1976).

Köhler (2012) mentions the "neo-Schumpeterian" approach which clarifies long waves of economic cycle following Kondratiev's and Schumpeter's work. The growth is carried by industrial innovation and technological change.

2.4.3 Drucker

Drucker (1985) explores (among others) the sources for innovative opportunity.

He believes that the occasion for a novel and distinctive ideas is always secured by variation.

> "Systematic innovation therefore consists in the purposeful and organized search for changes, and in the systematic analysis of the opportunities such changes might offer for economic or social innovation."

Innovations imposing changes are the most prosperous ones which forces entrepreneurs to investigate thoroughly to be able to recognise the chances of opportunities. Therefore innovation is a diagnostic discipline. Drucker suggests observing seven resources for innovative opportunity.

He divides the sources into four and three. The four involve changes inside and the three outside the enterprise which could be private or public organisation as well as the whole "industry or service sector". The four areas trustworthy evince changes realized or possible being realized in the future perceptible mainly to community inside the enterprise.

- "The unexpected – the unexpected success, the unexpected failure, the unexpected outside event;
- The incongruity – between reality as it actually is and reality as it is assumed to be or as it 'ought to be';
- Innovation based on process need;
- Changes in industry structure of market structure that catch everyone unawares.

- Demographics (population changes)
- Changes in perception mood, and meaning;
- New knowledge, both scientific and non-scientific."

Drucker stresses that all these source areas coincide with each other, every part as significant as the others and needs special investigation due to differences between them. The source areas are listed purposefully in a degressive sequence. The first one is the most trustworthy and the easiest to prognosticate. Drucker opposes the general acceptance with claiming that the new knowledge does not belong to the top of the list and that the unexpected brings surprisingly high certainty and low risk.

2.5 Models

Freeman and Engel (2007) explore a corporate and entrepreneurial model of innovation. The corporate model explains the need of an individual and the company as a whole. They can see a considerable disadvantage in a firm's size which influences the speed of technology and financial transfer. It is more difficult for large companies to innovate and the implementation of a novelty is slower as well. The entrepreneurial model is supposed to be more valid for new business of a smaller scale and less difficult structure. Entrepreneurial businesses that choose to come up with a brand new idea are accompanied by quick growth and there is close connection between the entrepreneur, venture capitalist and workers.

An interesting point is that some originally entrepreneurial means of implementing innovation may be useful for big companies. This might be due to the size of start-up firms. Nevertheless the culture supporting constant innovation is also vital (Handley and Ries, 2012).

Senker (1995) finds "linear" and "stage" models of innovation too plain. Such models are missing interactivity while emphasising order, research and development. She gives examples of other models such as "conversion", "integrative" or "technology-push/market-pull" and at the same time urges for comprehensive model because apparently all those listed omit an important component. She reviews the chain-linked model which stocks the knowledge gained by research.

2.6 Management/strategy of innovation

Quinn (1979) emphasises the importance of innovation in companies. Innovation was carried forward by individuals, specifically entrepreneurs. Although such an arrangement worked well he believes companies should pursue some of the patterns that made it effective. He noticed entrepreneurs tend to be committed to their beliefs, flexible in changing plans, not costly at the beginning, risk-taking, having a long-term view, not dependent on financial support, consumer need orientated. Large companies make mistakes by discouraging such characteristics. Nevertheless, some

kinds of innovation cannot be carried forward because of their scale. Therefore it is necessary for the management of large corporations to develop effective management of innovation.

Huang et al (2010) explore the imitative strategy of companies. They believe innovation is essential and finding an imitative strategy is the only efficient way because it is less dangerous. Although imitators adopt existing products, the manufacturing is new within their organization. Nevertheless some companies are not able to use their existing capabilities to successfully imitate. Furthermore such innovation may be hazardous.

3 Czech beer industry

3.1 History

The first reference of beer producing in the Czech Republic was in 993 AD in the Břevnov friary. In 1295 the town of Plzeň (Pilsen) was founded and the citizens were given the privilege to brew beer. The first breweries were established in the 13th and 14th century. By the 16th century there were over 3000 malt houses and small municipal breweries in the area of Bohemia (the major part of today's Czech Republic). In 1837 the master brewery got a grand prix at international exhibition in Paris. The 19th century technological discoveries transformed the brewing into industry which decreased the number of breweries to 600 before the First World War. Czech beer was very popular within the Austro-Hungarian Empire. During the 1920s the Czech beer was exported to more than 34 countries. During the Cold War the export was orientated to the east. The government nationalized all the industry and just before the Velvet Revolution in 1989 there were only 71 breweries left. In the forthcoming 20 years the brewing industry experienced rapid growth, some of the biggest brewing companies got acquired by foreign companies and the worldwide trade was re-established (ČSPS, 2013; Pilsner Urquell, 2013; Staropramen, 2013 and Budweiser Budvar, 2013).

3.2 Brewing companies in presence

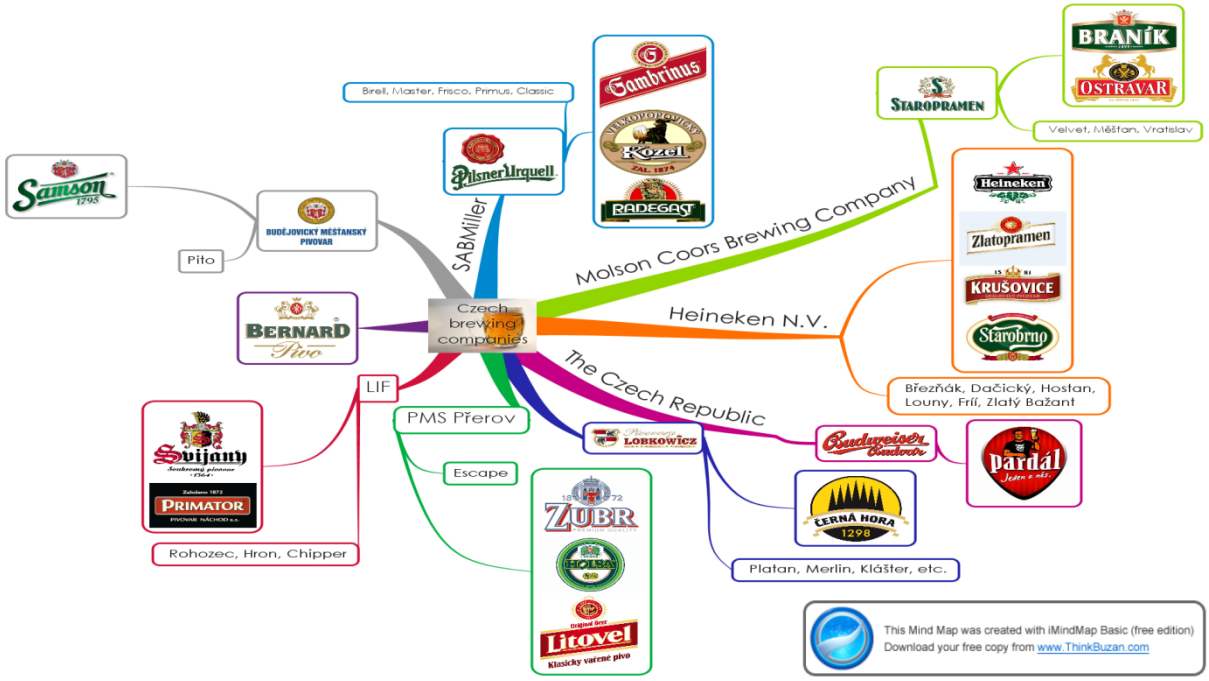

Figure 2 Mental map

The mental map (shown on Figure 2) demonstrates the proprietary relations between the largest brewing companies in the Czech Republic. The largest one, Pilsner Urquell owned by SAB Miller, is on the top, the others are co-ordinated clockwise in decreasing order. The ninth biggest is Budějovický měšťanský pivovar consequently shown next to Pilsner Urquell.

The logos chosen are the most popular brands of beer in the Czech Republic. Some of the breweries produce radlers, some not. Knowing the owner-occupied helps understand the organization's strategy. For example Staropramen is one of the largest producers of radlers within country. Ostravar is rather large firm and still does not innovate which corresponds to the strategy of the whole Molson Coors Brewing Company that owns both the brands. The same pattern is apparent with SAB Miller's Gambrinus that produces radlers and Radegast that does not.

3.3 Impact of the crisis

The brewing industry recently experienced difficulties due to the economic-financial crisis that influenced its demand (ČSPS, 2013).

ČSPS (2012a) introduce the statistics about the sales of beer in the Czech Republic. They were two years of decrease in 2009 and 2010. In 2011 there was a small growth of 2.7%. The same rundown experienced the export of the Czech beer. The trend of innovation in packaging and products continues. The range of special and unusual beers broadened and the market share was 6.5%. In 2011 the volume of beer sold in plastic bottles doubled compared to 2010, the share was 5.8%

Šámal (in ČSPS, 2012a) notices that the growth rate is still not as high as it was before 2008 and believes that the slowdown was caused by economic recession and an increase of consumption tax on beer. He finds export growth vital and thinks it is positive that brewing companies introduce new packaging. ČTK (2012) opines that the experts in the field agree that the recession forced brewing companies to innovate faster.

3.4 Definition of radler

Before the specific innovation is discussed, it is important to define the term "radler". In the Czech media it is possible to find various terms marking the same beverage and the brewing companies make it more difficult by introducing different range of similar products. Here is a hint of terms used in Czech media as well as on brewing firm's websites: radler, radler with flavour, mixed beverage made of beer, beer mix, flavoured beer, lemon beer and the most unmeaning one, summer beverage.

The brewing company Královský pivovar Krušovice a.s. (acquired by HEINEKEN Česká republika corp. in 2007) is the only one that got the trademark "radler" registered in 2002 when they tried to introduce radler to the Czech market (Čikarová, 2012 and Hrdinová, 2012a). In 2012 Heineken apparently decided to sue other Czech brewing firms for using the original German term for beer mixture. They are likely to lose because the expression is too general (Hrdinová, 2012a).

The word 'radler' is used from this point on. This paragraph introduces definition to clarify the term. Radler is a beverage mixed from beer and fruit lemonade or juice, usually with lemon flavour. It has a low alcohol percentage, regularly up to 2.2%. Originally, the radler is mixed in the tap with 30%-50% volume of beer and 50%-70% of chosen lemonade (Hrdinová, 2012a). The target group of this product are young adults and women.

Hrdinová (2012a) notices that the biggest players on an emerging radler market chose not to use the term. Mareček (in Hrdinová, 2012a), the spokesman of Pilsner Urquell, finds the word 'radler' general as used in other European countries and defines it as a mixture of beer and lemonade or juice. Nevertheless the firm doesn't use the expression on their labels. Barvík (in Hrdinová, 2012a and Čikarová, 2012) from Staropramen brewing company clarifies their choice of language by stating, that using the word 'radler' was not successful in the past. He emphasises the need to diversify and enlightens the difference by stating, that radler is made of lemonade and their product uses juice.

In my opinion, there is too much discussion about the correct expression. That is caused by the journalists, breweries and the history of radlers and other beer substitutes. In this dissertation radler

refers to mixture made of beer and lemonade or fruit juice. Čikarová (2012) believes that the expression 'radler' has most probably developed from the German term for bicyclist, der Radler. The history of radler is discussed more in the next section.

3.5 History of radler in the Czech Republic

The success of radlers in the Czech Republic is fairly recent although there have been attempts at introducing radlers to the Czech market before. Pivovary.Info (2013) mention "Herold mix" made by the Březnice brewery in 1995. They describe the beverage as low-alcohol mixture with lemon flavour. It was reportedly made from natural ingredients consequently it was more perishable then beer. Jobánek (2004) also makes reference to "Herold Mix" as to mixture of grapefruit or lemon lemonade with beer. Nevertheless, Krušovice brewery is most often remarked as the first brewing firm to sell radler in 2002. They had to cancel the production after three years because of consumer resistance (Čikarová, 2012 and Hrdinová, 2012a). According to the spokesperson for Heineken, Kosáková (in ČTK, 2012), the most important reason of failure was that the market was not ready for such innovation.

People in the Czech Republic view themselves as 'the beer nation'. This opinion may be supported by Czech Republic leading the consumption of beer per capita worldwide. That is another motive for resistance of the Czechs towards radlers until recently.

There have been different kinds of radler-like beverages in the Czech market though. Bernard brewing company introduced non-alcoholic beers with flavours – caramel in in 2007, cherry and plum in 2009 as a reaction to the upcoming financial crisis (Rodinný pivovar BERNARD a. s., 2013). The Pilsner Urquell placed "Frisco" on market in 2004. That is a unique product, very different from beer and from any other alcoholic beverage known in the Czech market until then. With similar level of alcohol as beer, Frisco started to compete in a different market segment (Müller, 2007). Finally after the upturn of radlers started, Pilsner Urquell introduced "Fénix" – wheat beer served with an orange slice (Fenix, 2012).

3.6 Radler in Europe

It is not clear where and how radler originated. All that we know now is that it was very popular on cycling routes in Germany and Belgium in the second half of the last century (Jobánek, 2004 and Hrdinová, 2012a).

The first mention of radler might be dated to the beginning of the 20th century. Christ (1912) in her book lists "Radlermaß" (=cyclists' grease) next to other beverages. The radler-like beverage was apparently made in the 1960's in the Czech Republic as well. "Kombajnovka" (=combine-harvester's

drink) was a mixture of lemonade and beer. It was not sold but people mixed it as a substitute for beer (Tauberová, 2012).

Radler's popularity is increasing in Germany and Austria. There are more variants of mixed beer beverages. Radler (lemonade and beer) is in almost every small brewery's product portfolio. In some taverns they mix radler as late as in the taps which is the original way of serving it. "Russen" is wheat yeast beer mixed with lemonade. There is "Altradler" (=alp radler) adding herb lemonade to beer. "Diesel" on the other hand controversially blends coke and beer and is common not only in Germany and Austria but in France as well, known as "Panche" (Jobánek, 2004). Hrdinová (2012a) also speaks about Germany's radler tradition by pointing out that the beer is mixed with lemonade and coke, juice and other sweet beverages too. According to her, radler was known at the beginning of the 20th century and was popular in Bavaria as a drink suitable for bicyclists.

3.7 Current position of radler in the Czech Republic

In 2010 Staropramen introduced a new beverage called Lemon Cool. In the minted market with radlers and fruit flavoured beers this brand had a 98% share (Hrdinová, 2012a). Since then many breweries started to produce radlers encouraged by the success of Staropramen.

Radlers are nowadays the main supporters of growth of the Czech beer. The range of flavours widens and sales are increasing. The most common are citrus flavours. There are also unusual flavours as apple with marijuana though. The sun and warm weather enhanced the consumption of radlers during the summer (ČTK, 2012). The spokesman for Staropramen (Barvík in ČTK, 2012) noticed that radlers do not compete with traditional beer. Radlers have got their own market and different customers – young people and women – consumers that do not drink beer much. Veselý (in Klička, 2012) agrees that radlers attracted new customers who have not consumed beer before for various reasons. The spokesperson for Heineken, Kosáková (in ČTK, 2012), says that the success of radler is influenced by a new generation of consumers who like to experiment and who travel more; therefore they may have already tasted different types of beers and radlers abroad.

Hrdinová, R. (2012b) sums up the recent development stating simply that the market share of radlers was 0% in 2010 and more than 4% in summer 2012. Klička (2012) reminds that in 2010 most of experts doubted radlers. He compares the market share of non-alcoholic beers and radlers (which was similar in 2012) and points out that it took almost a decade for non-alcoholic beers to gain those 3% of beer market. Radlers' growth on the other hand was rather quick – it took two years.

3.8 The future and trends

ČSPS (2012b) admit that the Czech beer culture is changing. In the last few years the consumers tend to experiment more. The supply and consumption of non-alcoholic beer has been rising for the last ten years. It appears that Czech customers appreciate the broadening of supply of brewing companies by radlers. Most Czechs have already tried radler.

Šuráň (in Hrdinová, 2012a) believes that radlers' market share will level off at 3-4% after the expansion of radlers ends. He compares the situation to Germany. Daněk (in his commentary on Čikarová, 2012) expects transfer from on-trade to off-trade consuming of beer, by another name from taverns and restaurants to home consumption. He points out the increasing popularity of special beers and beer mixes. He encourages brewing companies to focus on innovation. He enhances that consumers favour local beers.

Hrdinová, R. (2012b) notices that radler became the most popular during the summer (2012) because of the weather. She speaks about Zlatopramen introducing winter radler. This type of beer product has 4-5% of alcohol and is suitable for drinking both hot and cold. It should compete with mull, rum-tea or grog. Pilsner Urquell and Gambrinus (in Klička, 2012) warn against radlers with inorganic sweeteners and preservatives which drew the attention of the media; therefore it can be assumed that consumers' preferences will change and modify the way of producing radlers.

4 Methodology

This chapter defines and evaluates various research philosophies, strategies and methods. The most suitable approaches are chosen in order to achieve the research objectives (stated below).

- To explore what influences Czech brewing companies and how.
- To research the innovation diffusion.
- To analyse and compare the reasons that led Czech brewing companies to start to produce radlers.

Additionally the ethics issues are discussed as well as the limitations of study.

4.1 Research philosophies

Three main research philosophies are introduced in order to clarify the differences and to justify the choice of philosophy: positivism, interpretivism and realism. Positivism means a scientific approach. It includes experience, quantitative data and deduction. It is associated with pragmatism, empiricism

and logic. Peoples' behaviour is predisposed by social systems. This approach builds upon observation, objectivity and empirical evidence (Livesey, 2006; Abbott, 2010).

Interpretivism on the other hand perceives human behaviour as unpredictable and changeable. Therefore this approach is more subjective and prefers qualitative research explaining human activity based upon their subjective and relative point of view. Social systems are in this perspective created by peoples' behaviour and do not force them to act in a certain way (Livesey, 2006; Abbott, 2010).

Realism combines both approaches enhancing that it depends on the situation which method is more suitable. Social structures are both formed by people and create a pressure on them. Human behaviour is not predictable unlike in positivism (Halfpenny, 1987; Abbott, 2010). The realistic philosophy seems to be the most suitable for this research because it synthesises both philosophies and overcomes the problems of each.

4.2 Research approach

4.2.1 Deduction vs. Induction

Deduction concludes from true premises while logic is applied. If the deduction is valid the conclusion is also true. It reasons from general to specific. On the contrary the induction is constructed from expectations and probability. It logically explains the general from the particular by generalising (Halfpenny, 1987; Carr, 2009; Wilbanks, 2009). Due to the nature of this bachelor dissertation and the objectives, deduction approach has been chosen meaning that the general field of study is discussed in the literature chapter followed by data analysis and specific deductions resulting from the research.

4.2.2 Longitudinal vs. Cross-sectional study

Longitudinal research consists of repeated observation in order to perceive modification during time. The main focus is on the change. Cross-sectional research gathers data from a given time interval and compares information collected in this way. Cross-sectional research tends to be shorter (Smith, 2003). This research does not allow the longitudinal study essentially because of insufficient amount of time which is mentioned in the limitations thereinafter.

4.3 Research strategy

There are many research strategies possible to use. Elmer (1925) notices social sciences face a number of problems consequently a wide range of research methods is needed. Evely et al (2008) name experiments, surveys, action research, case studies, ethnography and grounded theory. In addition Denscombe (2003) speaks about internet research and phenomenology.

Experiment takes into account a change of conditions, observation of results and an identification of the causal factors. Surveys empirically and extensively maps present reality in a cross-sectional research approach. Action research solves real problems in real time with varying conditions and active participants. It explores potential change. A case study concentrates on a single already existing phenomenon and explores it in depth. The researcher focuses on relationships and uses variety of methods to study the phenomenon. Ethnography requires a reasonable amount of time, observes common life in a holistic approach concentrating on relationships. It is more than observation as the researcher experiences and explains rather than simply describes. Grounded theory is opposite to many strategies for it creates theories instead of grounding on them. Theories are based on empirical research. Phenomenology has some characteristics similar to interpretivism as it is subjective, descriptive and explores opinion and sense of people. It focuses on experience. Internet research is a wider term covering internet surveys, interviews, focus groups, ethnography, databases and this strategy is discussed hereinafter (Denscombe, 2003).

The research was time and money constrained which disqualifies ethnography. Also, the conditions in the Czech beer industry could hardly be changed by an individual and that excludes experimenting. It would be difficult to convince a real population of brewing companies to participate in an action research way. Grounded theory was not found feasible due to the author's insufficient research experience. Phenomenology was not considered because the research deals with companies, not people. A case study has been considered for it would utilize both primary and secondary data and the research objectives could certainly be achieved. Nonetheless the research would have to explore companies in great depth which would require more detailed data unavailable for a small-scale research.

A survey was taken into account and in the end selected because of its cost and time effectiveness. It would also be feasible to contact the whole population since it is formed by brewing companies only. On the contrary it is almost impossible to avoid the insufficiency of depth as the survey forfeits it in favour of breadth. In addition the results may be biased by the respondents (Denscombe, 2003). These disadvantages were supposed to be partially overcome by choosing an interview as the main research method. That would allow the obtaining of greater depth of information and to the regulation of the interviewees' bias.

Internet research seemed to be suitable for both – primary and secondary research. Karpf (2012) exhorts the online researchers to be cautious because the data available are sometimes not valid and the random sampling method tends not to be representative. One the other hand the advantages of online research are cost and time effectiveness, the wideness of available data and accessibility.

Consequently internet survey has been chosen as the most suitable taking into account the resources available.

4.3.1 Population

There are currently (updated on 24th March 2013) 195 breweries in the Czech Republic. Most of them (152) are microbreweries. The rest of them (43) are industrial breweries (Pividky .cz, 2013). The questionnaire was distributed to all the industrial breweries. Microbreweries (less than 10000hls) were excluded as the research is interested in companies at national and regional level only. The number of members of a population within this research is relatively low; therefore all of them were contacted and no sampling was needed.

4.4 Research method

The methods of collecting data within the survey are questionnaires, observation and interactive interviews (Evely et al, 2008). Denscombe (2003) also mentions documents.

Observation is direct, realistic and empirical and happens under natural conditions. The results are not biased by participants but tend to be influenced by the researcher's perception. This method is to some extent reliable but descriptive and makes simplifying assumptions. Documents are not very often mentioned as a research method which does not make sense given that secondary data are collected almost exclusively via this method. Sources of documentary data are mostly written, less often other visual such as images and objects and the least often audio sources. Interviews are simple to prepare and relatively cheap to conduct. On the other hand the researcher needs to understand the circumstances and the participant must be acquired with the research ethics. It may also be difficult to focus on the topic consequently the interview should be well arranged in advance. This method is appropriate for detailed research with a small number of participants and usually provides qualitative outcomes. Research questionnaires gather mostly quantitative data that are used as a base for analysis. It is the same set of questions distributed to all participants (Denscombe, 2003).

4.4.1 Primary data collection

At the beginning of the data collection the structured interview was chosen as an appropriate method since the research objectives are mostly qualitative and the population is not large therefore it would be possible to make assumptions from a small number of participants. The whole population were contacted via email however only one company agreed to contribute. The structure of an interview was created and the meeting date was supposed to be confirmed. Nonetheless in the end they stopped communicating. Consequently the questionnaire has been selected as a main primary research method.

Questionnaires are the most commonly used method even though they often add “no value” to the research. This method needs to be used with caution in social sciences because of its quantitative nature, unfeasibility of a random sample and the possibility of interpreting questions differently. Hence the questionnaire, if needed, should be very specific and brief to avoid unscientific results (Elmer, 1925). Nevertheless it is a cost-effective, easy to organise and quick research method (Denscombe, 2003).

The advantages of an online method have been discussed hereinbefore. Furthermore the electronic questionnaires might have higher response rate than the paper –based ones (Denscombe, 2009). That depends on the method of data collection. There are three types of online questionnaires: email, attached to email and web-based (Denscombe, 2003). The second one was chosen as it provided space for necessary information and a certain level of personal connection. An email was designed to explain the purpose of questionnaire, contained instructions, the deadline of the data collection and stated anonymity and voluntariness (see in Appendix). The questionnaire was enclosed as an attached file. All the participants got the same email.

4.4.1.1 Questionnaire

A pilot study has been done before the data collection. The questionnaire has been critically discussed with the respondent. Consequently a question about target customers’ income has been altered. The technological part was not working well because the category questions could not be chosen as assumed. This problem has been solved by modifying the file by enabling older versions of the software to edit the file.

The questionnaire can be found in Appendix. It has been designed to correspond with the qualitative research objectives. Therefore a significant amount of open questions was used. List and category questions were used to enable statistical analysis to some extent.

The first part divided the participant companies by the amount of beer produced and by the profile of a target customer. The amount of produced beer per year divided the companies into the following categories: microbreweries (up to 10000hls), brewpubs (up to 200000hls), regional (up to 500000hls) and large breweries (above 500000hls).Then the target customers were described by gender, age and income with category questions. It was possible to indicate more answers and show the width of target customers. The gender makes a difference in the beer and radler market. The age categories were: up to 18 years old(non-adults), 18-34 years, 35-49 years, 50-64 years, 65 and above. It was made sure the categories did not overlap. The respondents were asked to estimate the level of income to: lower, middle and higher level.

The second part of questionnaire explored influences on the participant company. These questions were open. The final part was related to the actual innovation, the reasons for it and the company's position on the market. Most of the questions were open exploring the reasons for innovation. The list questions divided the participants to leaders of innovation, followers and non-innovating firms. At the end of the questionnaire contributors were thanked for completing it and instructed on how the completed questionnaire should be returned.

The questionnaires were distributed by email in February and March 2013. The email failed to deliver to six of the addresses. Eleven brewing companies replied: four positively with completed questionnaires and seven negatively. Six of those stated they do not produce radlers and one apologised for the lack of time and provided annual report. It has been explained that the researcher was interested in data from non-innovating companies as well. Consequently, two other companies replied positively with completed questionnaires. That means the overall response rate is 14%.

4.4.2 Secondary data

The secondary data are often used in dissertations to compensate the insufficiency of primary data (Nicholson and Bennett, 2009). Documents were chosen as a suitable secondary data. In this case it is possible to find information about nine largest brewing companies and explore the issues within the research objectives. Data were collected online via brewing companies' websites, discussion forums and directly via email.

4.5 Representativeness, reliability, validity

Research is considered representative when its outcomes are characteristic and can be generalised. This is scientific and essential for positivistic approach (Abbott, 2010). This research should be representative to a great extent given that the survey was distributed to the whole population. Nevertheless only 35% of the population in fact participated. Therefore the results may not be representative for the whole industry.

Research reliability is often connected to scientific and positivistic approach. It should be possible to conduct the same analysis with the same results to denominate research as reliable (Abbott, 2010). This research is very specific by its time scope. There is innovation diffusion in progress consequently some of the results may change. The results within this research should be consistent because of the same time frame – the data collection one month. Also, the pilot testing was conducted, thus anticipates some of the future problems and there was a continuous communication with a participant who had problems with completing the questionnaire.

A valid research would display reality accurately by correct measurement methods (Abbott, 2010). The questionnaire was understandable due to clear instructions. However, the number of positive replies is not very high which lowers its validity. The participants were well acquainted with the subject of research thus competent to complete the questionnaire.

4.6 Research ethics

The participants were acquainted with the purpose of the questionnaire twice – in an email and again at the beginning of the questionnaire itself. The issue of anonymity was made clear in the email. The respondents were familiarized with the termination of the data collection within the email. It has also been mentioned that participants may withdraw at any point. No vulnerable groups were affected by research. The respondents were given the most feasible privacy given that the researcher was not in their presence. No harm was caused while doing this research.

4.7 Limitations of research

Before considering the results the limitations should be mentioned. Most of them have been already discussed before; hence this is a summary. The most significant limitation was time and economical constraint. Another issue rose while contacting the companies. The willingness to cooperate was very low as well as the number of collected questionnaires. On the other hand, the response rate (thus percentage of population covered) exceeded the average. Moreover the quality of responses was low. This might be due to the method of collection. Impersonal written communication is slower thus more difficult while solving problems with misunderstanding. Furthermore the number of open questions caused greater subjectivity of responses. And finally the majority of brewing companies did not wish to share their strategy. For above reasons the results need to be interpreted with caution.

5 Results and analysis

The purpose of this research is to gain an insight to innovation in the Czech beer industry with the focus on radlers.

The main objectives of this study are:

- To explore what influences Czech brewing companies and how.
- To analyse and compare the reasons that led Czech brewing companies to start to produce radlers.
- To research the innovation diffusion.

The interview has been chosen as an appropriate method for collecting data. The population is small; therefore it would easily be explored in depth. Nonetheless the response rate of population was too low. Hence the questionnaire was chosen bearing in mind the suitable research method. Consequently the design of questionnaire enhanced the data gathered to be mostly qualitative although collected by method used mainly for quantitative research.

Primary data have been collected by online questionnaire (as an email with attachment). The whole population of 43 industrial breweries has been addressed and six of them participated which is 14% of the population. It is important to mention that some of the respondents did not answer all the questions. The first part of this chapter analyses the profile of the respondents. Following parts present results of primary and secondary research in relation to the hypotheses stated hereinbefore.

5.1 Profile of participants

5.1.1 Primary data

Five respondents produce between 10000hls and 200000hls and one between 200000hls and 500000hls. The target customers of the brewing companies are equally male and female. The age of customers certainly does play role. Three firms indicated their customers are adults of any age, one company focuses on adults from 18 to 64 years old and one firm does not make a difference between customers' age at all. Brewing firms concentrate mostly (3 respondents) on customers with average income, partially on lower (2) and higher income (1). All of the respondents (6) innovate in terms of radler. Four of them perceive themselves as followers of innovation diffusion and two as leaders.

5.1.2 Secondary data

An online research focused on the nine largest companies in the Czech brewing industry. These companies have already been mentioned in the theoretical chapter and pictured on the mental map. The research explored mostly companies' official websites. The main reason for choosing large firms only is to compensate the insufficiency in the primary research, thus to enable comparison. The most of the brewing companies (7) in secondary research produce more than 500000hls of beer per year. One produces between 200000hls and 500000hls and one between 10000hls and 200000hls.

It has been found that most of the companies (8) innovate in terms of radler and those who do not, (2) have either introduced similar product already or are planning to. Pilsner Urquell's subsidiary Gambrinus introduced 'Gambrinus flavoured' radler and Staropramen started producing its own radler named 'Staropramen Cool'. Heineken's Zlatopramen compete with 'Zlatopramen Radler' while Pivovary Lobkovicz introduced 'Refresh' mixed in its subsidiary Pivovar Černá Hora. 'Escape' radler is

a part of PMS Přerov's portfolio. LIF's subsidiary Primátor developed radler called 'Chipper' and Samson (owned by Budějovický měšťanský pivovar) produces 'Samson mix'. Bernard brewing company is known for its 'Bernard with clear mind' range of fruit flavoured beer. Budweiser Budvar produces beers and lagers only; nevertheless they plan to start to supply the market with their subsidiary Pardal's radler called 'PardalOVO' in April 2013.

The companies studied in the secondary research are the largest brewing companies in the Czech Republic hence those who innovate may be perceived as leaders of innovation or early adopters. This topic will be discussed to depth in connection to theory of adopters in the next chapter.

5.1.3 Data combined

The secondary research complements the primary research and together they form to a certain extent representative sample. The quantitative results are shown in tables and charts for both primary and secondary data.

From the total number of 43 industry breweries in the Czech Republic, 35% companies have been participating in either primary or secondary research (table 1).

total number of participants	15
total number of industry breweries	43
percentage of participants	35%

Table 1 Percentage of participants

5.1.3.1 Beer production per year

	primary data		secondary data		sum	
	frequency	percentage	frequency	percentage	frequency	percentage
up to 10000hls	0	0%	0	0%	0	0%
10000hls-200000hls	5	33%	1	7%	6	40%
200000hls-500000hls	1	7%	1	7%	2	13%
more than 500000hls	0	0%	7	47%	7	47%
total	6	40%	9	60%	15	100%

Table 2 Beer production per year

The table 2 shows the total numbers of participants from both primary and secondary research and divides them according to the beer production per year. The last two columns show the sum of both. The data are shown both by frequency and percentage.

The chart 1 displays the total percentage of participating companies (sum) and the aliquot parts of firms contributing to research directly (primary data) and indirectly (secondary data).

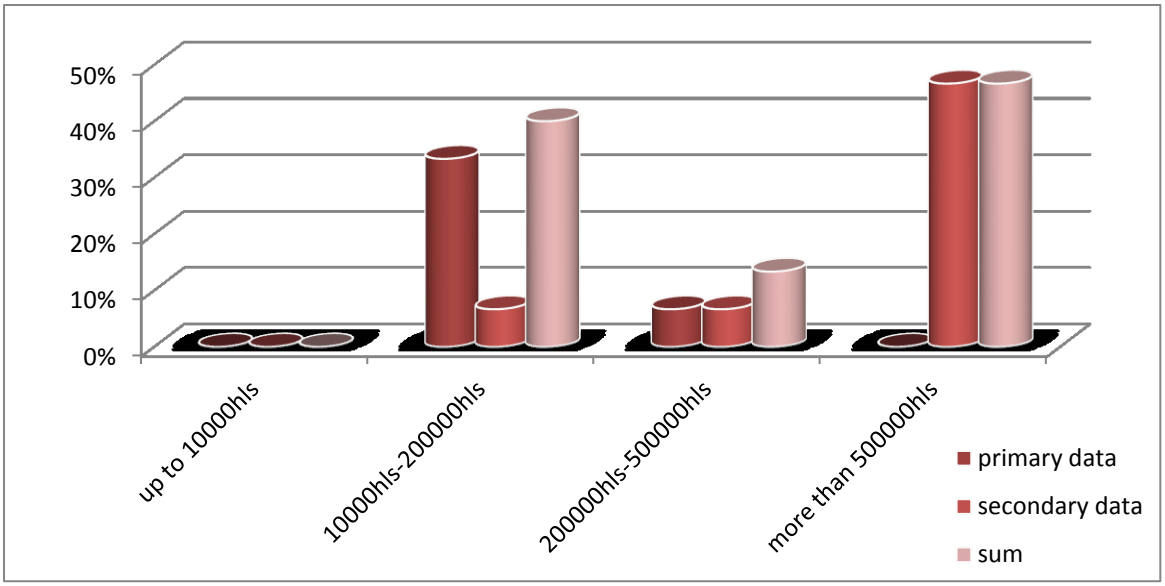

Chart 1 Beer production per year

Almost half (47%) of participants are large companies with beer production per year over 500000 hectolitres. Forty per cent of respondents brew from 10000 to 200000 hectolitres and 13% produce more than 200000 and less than 500000 hectolitres. Microbreweries were not addressed hence there is no company with beer production under 10000 hectolitres.

5.1.3.2 Radler innovation

	10000-200000hls		200000-500000hls		more than 500000hls		sum	
	frequency	percentage	frequency	percentage	frequency	percentage	frequency	percentage
innovating	6	40%	1	7%	6	40%	13	87%
non-innovating	0	0%	1	7%	1	7%	2	13%
total	6	40%	2	13%	7	47%	15	100%

Table 3 Radler innovation

The table 3 shows the frequency and percentage of innovating and non-innovating breweries participating both directly (primary data) and indirectly (secondary data). The innovation here means supplying the Czech market with radler. Firms are divided according to the beer production per year.

All the smallest participating brewing companies innovate. The larger ones (200000-500000hls) are half innovating half non-innovating and the most of the largest ones produce and sell radler as well. The sum presents the ratio of innovating and non-innovating firms. The chart 2 displays percentages of the data in the table 3.

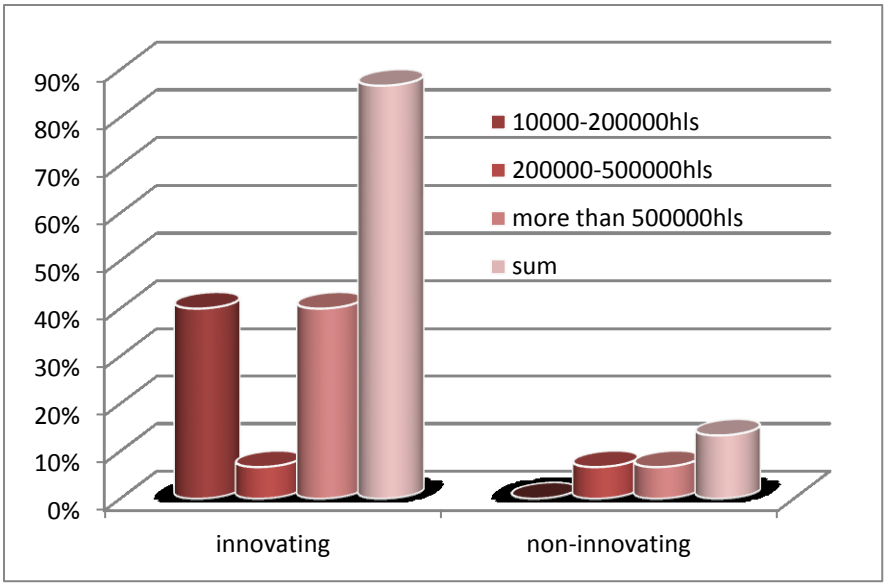

Chart 2 Radler innovation

The majority (87%) of participants innovate. The minority (13%) of non-innovating firms are two companies from which one is planning to introduce radler in April 2013. That fact makes the non-innovating firms exceptions.

5.2 Influences

5.2.1 Primary data

All of the respondents (6) indicated that the customers have the main influence on their strategy. Respondents have written that the influence of customers is given by the demand (2) and volume of consumption (2). In addition the customers generate companies' income and give the feedback.

The competitors have no less influence on respondent companies. All of the participants (6) have mentioned the competitors among the crucial influences. Price policy, advertisement and product quality of competitors concern companies as well. Furthermore the low cost imported products also seem to apprehend brewing firms in terms of competition.

The government has mostly negative influence. The majority of respondents (3) have complained about the legislation. Some participants (2) have written about the consumption tax. One company has mentioned other established taxes and fees that lowered the consumers' income and thus influenced consumption by lower spending. One company has indicated the limit for breath alcohol test being 0‰ among other policies.

There were two other influences mentioned in the questionnaires: insufficient funds and the weather. The limited funds directly influence the innovative activities. The level of influence of the weather has been indicated as crucial.

5.2.2 Secondary data

The data collected secondary provided limited information only. Although there are many factors influencing the largest companies the only well-founded information is that all the companies are influenced by the demand or customers. That is clear from the reasons for innovation they have stated in the press releases. That point is discussed more in the following part connected to the second research objective.

5.2.3 Data combined

	10000-200000hls		200000-500000hls		more than 500000hls		sum	
	frequency	percentage	frequency	percentage	frequency	percentage	frequency	percentage
demand of customers	6	40%	2	13%	7	47%	15	100%
competition	5	33%	1	7%	0	0%	6	40%
the government	3	20%	0	0%	0	0%	3	20%
weather	1	7%	0	0%	0	0%	1	7%
total number of companies		15						

Table 4 Influences

The data from both means of research are displayed in the table 4. The firms are divided according to the beer production per year. The table 4 illustrates the frequencies of occurrence of given factor.

The percentage of every factor occurrence within the whole sample is demonstrated with the table 4 and the chart 3.

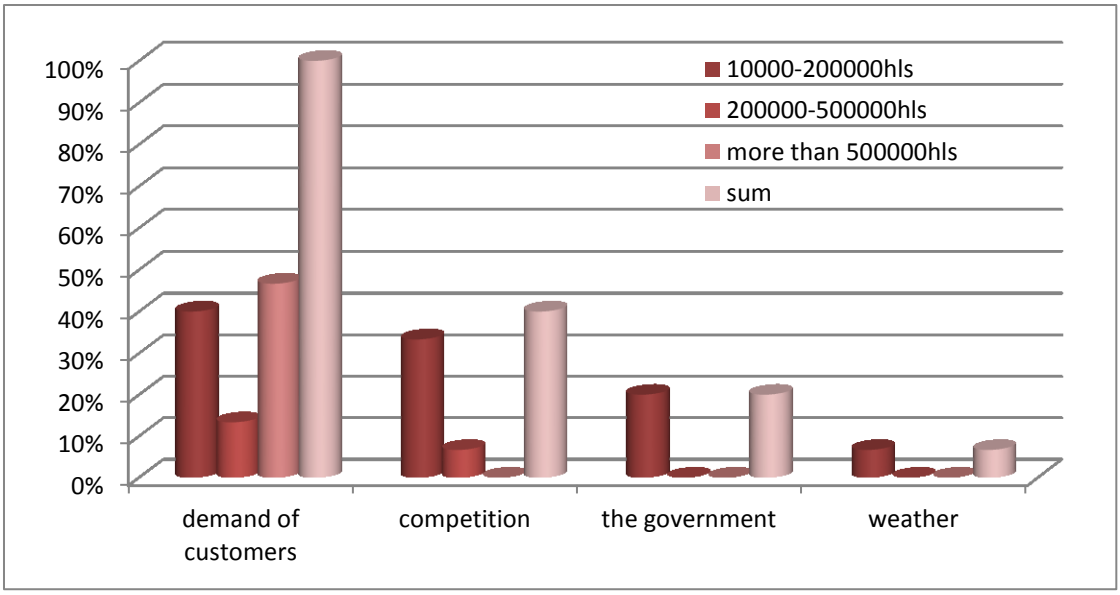

Chart 3 Influences

All of the companies (100%) have indicated customers are the crucial factor of influence. Moreover 40% of participants are influenced by competition, 20% by the government and 7% have mentioned the weather conditions.

5.3 Reasons for innovation

5.3.1 Primary data

All of the respondents (6) innovate in terms of adding fruit ingredient in beer. A half of them (3) stated that the demand in form of customers is the most important factor. Participants mentioned that the customers create the demand and the demand determines the supply. Some of the firms (2) identified the increased competitiveness as the crucial reason and one company indicated that the growth of the beer industry lies in the radler segment.

Apart from the most important ones there were other reasons declared: the recent trend of introducing radlers, the growth of beer industry, the market force, broadening the company's product portfolio, gaining new customers, increasing the annual amount of brewed beer, growing popularity of radlers in the Czech Republic and filling the market niche.

The strategy connected with introducing radler varies company-to-company. One company sees radler as a way to raise the volume of sales. Another is concerned with competition. Different firm considers radler a subsidiary income in addition to regular beer production. Two companies view themselves as experts on special beers and fruit flavoured beer mixture was missing in the portfolio. And one firm has stated that radler is as a part of its marketing plan.

5.3.2 Secondary data

From the total number of 9 companies 7 produced radlers in the time of data collection. As understood from the press releases six of the innovating firms mentioned the consumers, customers or generally the demand as the factor influencing their decision to start supplying the Czech market with radlers. In connection to influencing factors of companies it might be found that all of the companies made their decision based on customers' preferences. Nonetheless those assumptions were not proved by research. Staropramen as the leader of innovation included statement (in its announcement about introducing radler to the Czech market) that seeking a market niche is vital for companies.

5.3.3 Data combined

	10000-200000hls		200000-500000hls		more than 500000hls		sum	
	frequency	percentage	frequency	percentage	frequency	percentage	frequency	percentage
demand of customers	4	31%	0	0%	5	38%	9	69%
growth of segment	2	15%	0	0%	0	0%	2	15%
competition	1	8%	1	8%	0	0%	2	15%
market niche	0	0%	1	8%	1	8%	2	15%
total number of companies		13						

Table 5 Reasons for innovation

The table 5 gives a summary of both primary and secondary researched companies. Only innovating firms were taken into account while exploring the reasons for innovation hence the total number of 13. The table 5 displays the different reasons for innovation. The sum of frequency and percentage are again divided according to company's volume of production. The percentages are demonstrated in the chart 4.

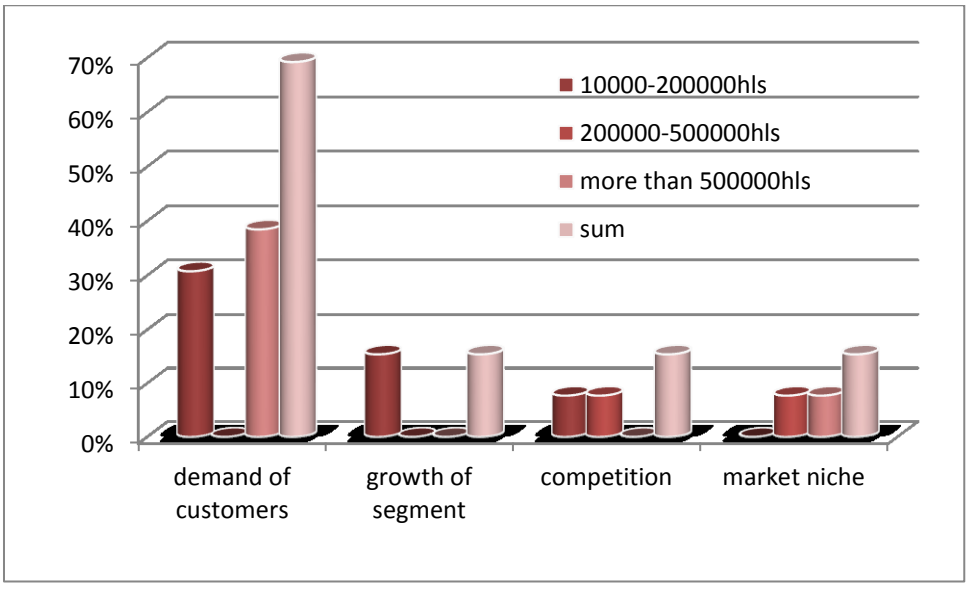

Chart 4 Reasons for innovation

The main reason for innovation for 69% of companies was the demand of customers. Fifteen per cent of participants identified the growth of radler segment of the Czech beer market. The same percentage of firms indicated competition and market niche as one of the reasons for innovation.

While the demand, competition and market niche are at approximately same level through the various sizes of companies, the growth of segment seems to be reason for innovation for smaller companies only.

5.4 Innovation diffusion

5.4.1 Primary data

As stated above, all of the respondents (6) innovate in terms of radler. Every the company indicated that their main competitor innovates as well. The majority of participants (4) view themselves as followers of innovation and the minority (2) perceive themselves as leaders of innovation. The followers explain their position by stating, that they are not large companies thus they cannot introduce any new products and they have adjusted their portfolio because of increasing popularity of radlers. The leaders either stated that they have their own way or their fruit flavoured beer products differ from radlers thus they are independent.

	10000-200000hls		200000-500000hls		more than 500000hls		sum	
	frequency	percentage	frequency	percentage	frequency	percentage	frequency	percentage
leaders	2	33%	0	0%	0	0%	2	33%
followers	3	50%	1	17%	0	0%	4	67%
total	5	83%	1	17%	0	0%	6	100%

Table 6 Innovation diffusion

The frequency and percentage of leaders and followers within the research is shown in the table 6 and compared visually in the chart 5. The data are again divided according to the beer production per year. The total number of companies compared according to their perception is 6 which is the number of innovating participants. Only primary data have been taken into account in this case since the secondary research does not allow simplifying diffusion in such way.

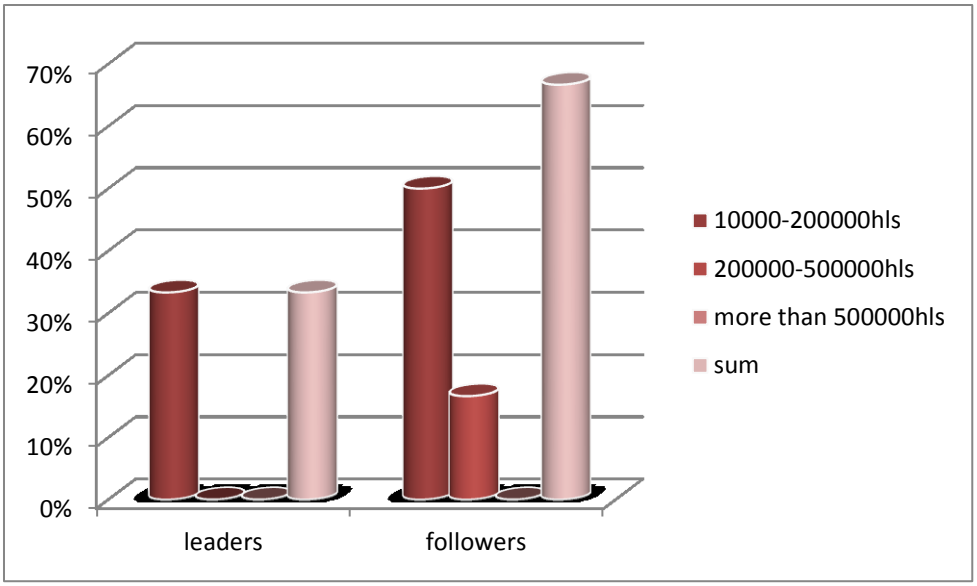

Chart 5 Innovation diffusion

The majority (67%) of participating companies view themselves as the followers of the innovation diffusion. The rest 33% (2 firms) believe they are the leaders for various reasons. While followers of any size think they are not large enough to lead the innovation, those who labelled themselves as leaders are the smallest among the industrial breweries.

5.4.2 Secondary data

The first company to introduce radler to the Czech beer market was Staropramen in May 2011. The beverage got popular and nine months later Samson started to produce radler as well. In April 2012 three brewing firms broadened their portfolio with radler and another two companies brought their radler innovation in the market approximately a year after the first brewery meaning May 2012. Among the nine largest breweries in the country seven have started producing radler since May 2011 to March 2013 and one is planning to start in April 2013.

5.5 Secondary research

This part gives a summary of companies explored during the secondary data collection. The firms are ordered according to the date of introducing radler to the Czech market starting with the first one- Staropramen.

5.5.1 Staropramen

Staropramen brewing company was the first one in recent years to produce radler. The firm's management of innovation responded to results from their preference analysis that suggested that the Czech consumers prefer wide range of tastes. Their radler has been introduced to the Czech market in May 2011 deliberately before summer. The new product was meant to attract women and

young adults. They believe that seeking market niches is vital for every company nowadays. The fast growth of popularity among customers and thus the increased volume of sales surprised the innovators despite that the novelty seemed to be accepted well while taste testing.

5.5.2 Budějovický měšťanský pivovar – Samson

Samson Radler has been introduced in February 2012 with a large marketing campaign. The drink has been recommended to men and women as well. Samson has been the first company to produce different than lemon flavour of radler in the Czech Republic by introducing both-lemon and grapefruit version of the beverage at the same time. The firm Samson noticed the growing popularity among consumers and has been innovative in terms of bottling too. Every other radler that can be bought in the Czech Republic is sold either in half-litre glass bottles or cans. Samson on the other hand offers not only half-litre tins but a third litre glass bottles with screw cap.

5.5.3 Pilsner Urquell – Gambrinus

In April 2012 Gambrinus broadened its portfolio by introducing its radler. The decision was based upon increasing number of consumers who want to try different tastes and are enthusiastic about novelties. The radler was supposed to interest customers seeking refreshment.

5.5.4 LIF – Primátor

Chipper is the name of radler introduced in April 2012 by LIF's brewery Primátor. It is presented as a beverage suitable for beer-lovers who enjoy experimenting, for women and young people. The producer suggests the radler is an ideal drink to consume during summer and while sporting.

5.5.5 Heineken – Zlatopramen

April 2012 was a month of introducing innovation for Zlatopramen brewing company as well. Its radler sales exceeded the estimates three times. The firm noticed the increasing popularity among consumers during the years 2011 and 2012.

5.5.6 Pivovary Lobkowicz

'Refresh' is the name of radler made by subsidiary firm Pivovar Černá Hora since May 2012. The company reacted to the high demand for radlers. The beverage is designed mostly for women and young people who have not consumed beer before because of its bitter taste. The date of market introduction is not coincidental since the beverage was supposed to be successful especially during summer. The brewery in Černá Hora has invested in syrup stirring device hence the lemonades are produced inside the brewery.

5.5.7 PMS Přerov

The largest brewery from the PMS Přerov brewing group, Zubr, has got radler as a part of their portfolio since May 2012. The demand has surpassed expectations. The beverage was developed with assistance of consumers and is viewed by the firms as a summer drink. Other brands of theirs, Holba and Litovel, are planning to innovate in this way from later 2013. PMS Přerov also produces a radler brand of its own named Escape in cooperation with all the subsidiary breweries. Escape focuses solely on young consumers.

5.5.8 Budweiser Budvar – Pardál

In April 2013 Budweiser Budvar is going to start supplying the Czech market with radler. The company believes that the beverage will suit both men and women. The radler development has started in September 2011 and for the first time in the Pardál history involved women in the beverage harmonizing.

5.5.9 General statistics

The sales of radlers in 2012 are estimated to 460000hls. That makes this innovation the most successful one in the recent history and the radler market the fastest growing segment. The radler sales together with export secured the growth of beer production in 2011 and 2012. The data were collected in February and March 2013 and analysed in March and April 2013. During that time the Pardál's radler was introduced to market which means that from the total number of companies included in research (15) only one has not started to produce radler.

6 Discussion

The data analysed in the previous chapter aimed to respond to the objectives stated at the beginning of the research. The discussion is divided according to the objectives that focused on the influences on brewing companies, reasons for innovation and on the innovation diffusion. After addressing the objectives deductions will be made. Moreover an insight in the future via predictions, recommendations and suggestions will be given bearing in mind the limitations of the research.

6.1 Influences

The first objective involved exploring influences on Czech brewing companies. That is an important element of structure of the Czech beer industry because the diffusion of innovation is an accumulative level of influence on an individual to react to an innovation (Rogers and Shoemaker, 1971). The probit model emphasises the significance of an influence individuals have on the diffusion (Geroski, 2010 and Tidd, 2010).

The primary data revealed the subjective qualitative responses and the secondary data provided an insight into the large companies' strategy. Companies of all sizes are mostly influenced by customers as they create the demand. All of the participants are influenced by customers. The changes in consumers' taste or income thus concern most of the breweries and (as understood from secondary data) companies regularly analyse these preferences.

Another important influence has the government as a policy making body. Twenty per cent of participants indicated they are significantly influenced by the government. Not only it affects the breweries directly via taxes but defines rules that affect the customers as well. The most often mentioned concerns were legislation and the consumption tax. Šámal (in ČSPS, 2012a) believes that the increase of consumption tax is one of the reasons for a brewing industry slowdown.

The development of technologies certainly has a certain level of influence. Trott (2008) includes the technical invention in the definition of innovation. Samson mentioned new bottling in the press release and Pivovary Černá Hora spoke about investment in blending device.

One of the important influences is the development of the radler sector. Growth naturally appeals to companies and decline repels them. The case of radler segment of the beer industry demonstrates not only successful innovation diffusion (which is discussed hereinafter) but the attractiveness of growing sector too. It appears that every company that started producing radlers after the innovator (Staropramen) that was influenced mainly by the demand that determines the growth of industry segment.

Hrdinová (2012b) sees a connection between the increased popularity of radlers and the weather in summer 2012. ČTK (2012) believe that the sunny and warm weather directly increased the consumption of radlers. These thoughts are supported by the fact that 7% of the participants mentioned the weather conditions among the influences.

6.2 Reasons for innovation

The second objective comprised the analysing and comparing the reasons that led Czech brewing companies to start to produce radlers. Starting with saying that innovation is an essential and vital part of any business (Freeman, 1982; Huang et al, 2010) it may be suggested that the innovation is inevitable and a common part of organization (Solo, 1951) or just a part of an industry innovation cycle (Trott, 2008). On the other hand Schumpeter (1939) warns against the eventual decline of any production curve. That means that companies are indeed forced to innovate once they are no longer able to compete with their goods.

There are a few facts that led the brewing companies to innovate in terms of radler. The experts believe the economic-financial crisis made the brewing companies innovate quickly (ČTK, 2012). The statement is in real terms supported by secondary research that revealed that 87% of participants started to innovate by producing radler within the first two years of diffusion.

There are recent market trends that may have possibly influenced the brewing firms. New packaging and broadened range of special beers was typical for the year of 2011 (ČSPS, 2012a). The research suggests the companies acquired these trends rather quickly. New bottling and producing novelty beer products is not unusual among the Czech brewing companies nowadays.

The research suggests that the most important reason for innovation is the customers' demand. Sixty-nine per cent of participants indicated that. Schumpeter (1939) includes creating new demand as a part of definition of innovation. Myers and Marquis (1969) point out that innovation connects the creating new product as well as a new demand. The demand certainly influenced the decision of followers to produce radlers. The leaders explore the demand potential for example by conducting surveys and testing samples.

Fifteen per cent of companies defined the competition and the market niche as key aspects. The leader of innovation – Staropramen – claimed that firms should seek and fill market niches. The firms are concerned with their competitors as well as remaining competitive in general. All of the breweries in the primary research stated that their main competitor innovates too. Companies need to develope new products in order to remain competitive (Trott, 2008). Fifteen per cent of respondents specified the market growth as the reason for innovation. Radler segment grew rather quickly (Klička, 2012). That appealed to more and more companies and hence the innovation spread.

6.3 Innovation diffusion

The third objective was composed of researching the innovation diffusion. The respondents of questionnaires were divided to leaders and followers of the innovation diffusion. That is simplifying point of view because the diffusion is more complex even when it comes to types of participants. Such simplification helped the participants to complete the questionnaire and the author to analyse the data. In reality there are innovators, early adopters, early majority, late majority and laggards (Rogers and Shoemaker, 1971; Tidd, 2010). In the case of primary research the leaders and early adopters were identified as 'leaders' and the rest were denominated as 'followers'.

Nevertheless the secondary data enabled to identify more types. The leader is Staropramen because it has been the first company enter and basically create the new segment of market. The early adopter in this small case has been Samson, the second brewery to produce radlers. The early

majority could be defined by Gambrinus, Primátor, Zlatopramen and PMS Přerov who all have introduced their radlers at almost the same time approximately a year after the leader. Late majority could be represented by Pardál that will start to sell radler a year after the majority of large breweries. Nonetheless its press release has mentioned that the company has started developing the new product relatively shortly (4 months) after the leader introduced the novelty to the market. That information suggests that even Pardál could be perceived as an early adopter which would confirm that this particular innovation diffusion is still in its early stages.

The laggards are most of the companies that have not started innovating yet. Not all of them because this innovation has been introduced to the market two years before this research has been done. That means the peak of the innovation diffusion may lie ahead and any conclusions should be made with a distance. The example of Pardál brewing company demonstrates that even two years after the leader there are still firms that intend to innovate and that there may not be enough data yet to define the laggards not even the late majority.

The Czech media got used to calling radlers 'summer beverages'. The influence of weather has been discusses hereinbefore. Hrdinová (2012b) and ČTK (2012) noticed the rapid growth of popularity in summer 2012. Staropramen introduced radler in May 2011, three brewing companies in April 2012, two in May 2012 and one is going to start producing in April 2013. This demonstrates that seven from the eight largest innovating breweries have started to acquaint their customers with the novelty shortly before summer. That suggest there is possible relationship between the season of the year and the spreading popularity of radler which directly affects brewing companies as discussed before.

6.4 Deductions

Czech brewing companies are without exception influenced by customers despite the different volumes of production. Consumers determine the supply consequently firms try to influence their preferences. The government seems to influence the companies' income directly and indirectly by applying policies on the customers. New technologies give an opportunity to innovate more efficiently and the growth of radler segment supports further diffusion. The weather may have a certain influence on companies too. Sunny and hot weather appears to increase the demand thus to enhance sales.

There are multiple reasons that led Czech brewing companies to start to produce radler. The most significant one may be the economic crisis that has accelerated the development of new product and market analysis. It seems that the demand determines the supply because most of the participants

have chosen the customers' demand as the most important reason for innovating. The trends in producing special beers have an influence on innovation as well. Some of the participants gave other reasons for radler innovation such as filling the market niche, sustaining the competitiveness and being attracted to radler segment growth.

The innovation diffusion was rather rapid and two years after the beginning it is rare to find a company that does not innovate in terms of radler which shows the success of radler diffusion. The participants have been divided to groups according to their position in the S-curve model of innovation diffusion. Nonetheless the probability of determining this correctly at the early stages of diffusion is low. The velocity of diffusion is directly connected to the season of the year since it has been proved that the consumption of radlers culminates during summer.

6.5 Future

6.5.1 Predictions

In the long run the industry cycles are most probably going to repeat (Day, 1976 and Kerevan, 2000). In the short run the future development of the innovation may include further diffusion. Customers appreciate broadening of the breweries' portfolio (ČSPS, 2012b) and the research provides evidence that brewing companies perceive consumers' needs as the priority of the highest.

6.5.2 Recommendations for brewing companies

It appears to be favourable to follow trends. There are very few industrial breweries that do not produce radler. It seems that customers' consumption is the most important influence factor and all the innovating breweries stated they were trying to satisfy the existing demand. The brewing companies should be encouraged to focus on innovation particularly on special beers, beer mixes and local beers (Daněk in Čikarová, 2012). The expansion of radlers will sooner or later slow down as it reaches the balance. The radlers' market share is probably going to level off at 3-4% of the market share (Šuráň in Hrdinová, 2012a). The market share in 2012 was 3.1% (Klička, 2012). Therefore brewing companies should start to focus on another market niches or innovation rather sooner than later.

6.5.3 Suggestions for future research

Although the study covered 35% of population further studies are needed in order to clarify some aspects that were not explored to depth. Cooperation with more participants would improve the study. The most significant problem was to obtain responses. Moreover personal data collection may provide more valid results. Consequently future researchers need to concentrate on overcoming these difficulties. In addition the diffusion of innovation is in the early stages hence complex studies

will be possible as soon as the diffusion reaches end and that is a point difficult to designate. Conducting a research including microbreweries may also be taken into account. The popularity of local breweries grows (Daněk in Čikarová, 2012). Microbreweries are smaller firms thus the response rate could be higher, the study would be broader and the population would be larger enabling more quantitative research with the use of statistics. Moreover the comparison with large industry breweries would be possible.

7 Conclusion

The main aim of this study was to understand the recent radler innovation in the Czech beer industry. The objectives stated below were analysed and discussed.

- To explore what influences Czech brewing companies and how.
- To analyse and compare the reasons that led Czech brewing companies to start to produce radlers.
- To research the innovation diffusion.

The innovation is a process of developing new product idea together with inventing manufacturing technology and marketing plan. This process is vital for every company. There are many types of innovation. The most common types are technological and newly developing non-technological innovations. Product innovation consists not only from the product development as it is completed after marketing to the customers. Diffusion of innovation is a process of accepting the innovation within the industry. The most common model is the S-curve. This model is able to demonstrate the rate of awareness, rate of adoption or the position of the company according to the time of embracing innovation. Two theories of innovation were presented: Schumpeter's dynamic disequilibrium and Drucker's sources for innovative opportunity.

The most important influences on companies are customers, governments' policies, technology opportunities and the weather. All of the participants indicated customers influence them the most significantly. The main reasons for radler innovation are the economic crisis, consumers' demand, trends in special beers, discovering the market niche, sustaining the level of competitiveness and the radler segment growth. The demand seems to be the crucial determining factor. The diffusion of radler innovation was explored in terms of the S-curve model and the participants have been divided according to the time they adopted the innovation. The diffusion is still at the beginning and the innovation spreads rapidly.

The diffusion of radler innovation should continue and customers will probably appreciate wider portfolio. Nevertheless the innovation will eventually spread to the whole industry; brewing companies thus need to explore customers' demand and possible market niches. The time and economic constraints, willingness of brewing companies to cooperate and quality of responses were the most limiting factors of the whole research. All the deductions should be interpreted with caution and further studies are clearly needed. Obtaining data from more companies or including microbreweries could enable wider and deeper insight in the research topic. Also a deep holistic longitudinal study of innovation diffusion could follow this research.

Appendix

E-mail sent to respondents

Czech - original version

Hezký den,

jsem Veronika Lančová, studentka University of Huddersfield. Provádím výzkum pro bakalářskou práci na téma Inovace v českém pivním průmyslu a zaměřuji se na tzv. ovocná piva.

Prosím o vyplnění anonymního dotazníku. Účast je dobrovolná a dotazovaný může kdykoli s odpovídání ukončit.
Na oplátku nabízím svou práci, která bude obsahovat analýzu dat získaných tímto průzkumem.
Vyplnění zabere jen pár minut Vašeho času a skutečně mi velmi pomůže, protože respondentů je málo.
Termín ukončení sběru dat: 18. března 2013.

Děkuji,

Veronika Lančová

Translated

Hello,

My name is Veronika Lančová and I am a student at the University of Huddersfield. I am doing a research within my bachelor dissertation. The topic is Innovation in the Czech beer industry and I focus on so-called fruit flavoured beers.

Please fill an anonymous questionnaire. The participation is voluntary and participant can withdraw at any time. In return I offer my dissertation that will contain analysis of data collected by this survey. Filling will take just a few minutes of your time and will help me a lot because there are very few respondents.

The deadline of data collection: 18th March 2013.

Thank you,

Veronika Lančová

Questionnaire

The original-Czech version

Dobrý den, jmenuji se Veronika Lančová a studuji na University of Huddersfield. Tento dotazník je základem primárního výzkumu k mé bakalářské práci o inovacích v českém pivním průmyslu.

Dotazník:

Jaký je váš roční výstav?

Zvolte položku.

Kdo je vaším cílovým zákazníkem? (Vyberte všechny možnosti.)

pohlaví: ☐ muži ☐ ženy

věk: ☐do 18 let (nezletilí) ☐18-34 let ☐35-49 let ☐50-64 let ☐65 a více let

příjem: ☐ nižší ☐ střední ☐vyšší

Kdo/co vaši firmu nejvíce ovlivňuje (např. zákazníci, konkurenti, vláda)?

Zde vložte text:

Jak?

Zde vložte text:

Jaké jsou další faktory a jejich velikost vlivu?

Zde vložte text:

Inovuje vaše firma ve smyslu přidání ovocné složky do piva?

Zvolte položku.

Proč jste se rozhodli jako firma (ne)inovovat ve smyslu přidání ovocné složky do piva?

Zde vložte text:

Který z důvodů byl nejdůležitější?

Zde vložte text:

Jak toto rozhodnutí koresponduje s dlouhodobou firemní strategií?

Zde vložte text:

Jak se chová váš největší konkurent ve smyslu ovocných piv?

Zvolte položku.

V případě, že inovujete, vnímáte svou firmu jako vůdce nebo následovníka šíření této inovace?

Zvolte položku.

Podpořte prosím toto tvrzení praktickým příkladem.

Zde vložte text:

Děkuji, velmi si vážím Vašeho času.

Nyní prosím dotazník odešlete na vercalancova@gmail.com .

Translated questionnaire

Hello, my name is Veronika Lančová and I am studying at the University of Huddersfield. This questionnaire is the basic element of my research in my bachelor paper about innovation in the Czech beer industry.

Questionnaire:

How many hectolitres do you brew per year?

Please select one.

Who are your target customers? (Please select all that applies.)

gender: ☐ males ☐ females

age: ☐up to 18 years old(non-adults) ☐18-34 yrs ☐35-49 yrs ☐50-64 yrs ☐65 and above

income:☐ lower ☐ average ☐higher

Who/what does influence your company the most (e.g. customers, competitors, the government)?

Please insert text:

How?

Please insert text:

What are other factors and their level of influence?

Please insert text:

Does your company innovate in terms of adding fruit ingredient in beer?

Please select one.

Why have you decided (not) to innovate?

Please insert text:

What reason played the main role?

Please insert text:

How does this decision cope with firm's long term strategy?

Please insert text:

How does you main competitor behave in terms of fruit beers?

Please select one.

In case you innovate, do you view your company as a leader or follower of the diffusion of this innovation

Please select one.

Please support the statement with practical example.

Please insert text:

Thank you, I value your time very much.

Please send the questionnaire to vercalancova@gmail.com .

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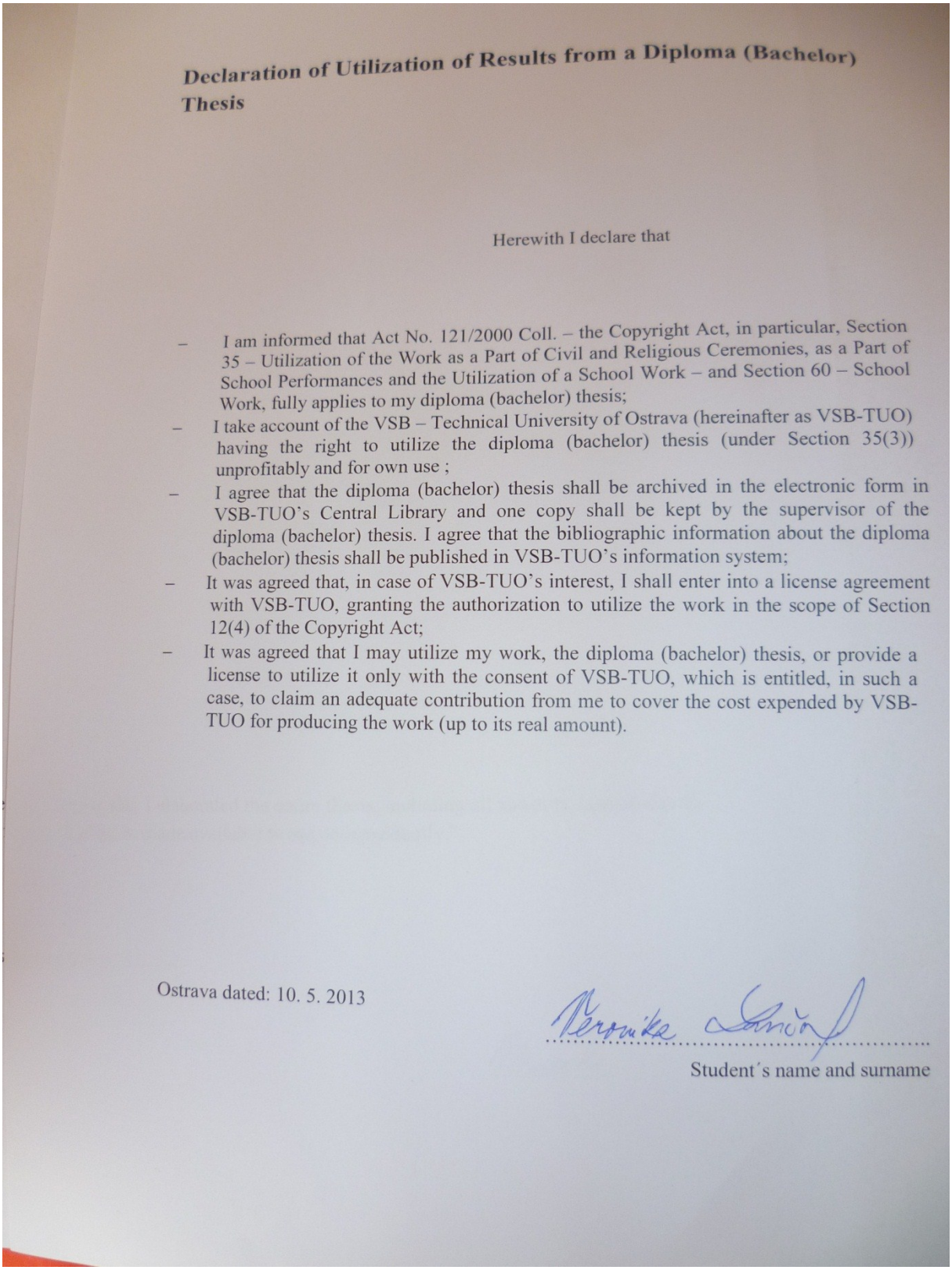

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Veronika Šarišová

Student´s name and surname